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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)



Applicant's or agent's file reference PH/5-70176A	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/13017	International filing date (day/month/year) 20.11.2003	Priority date (day/month/year) 21.11.2002
International Patent Classification (IPC) or both national classification and IPC A01N43/76		
Applicant SYNGENTA PARTICIPATIONS AG et al		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

- This report contains indications relating to the following items:
 - ☒ Basis of the opinion
 - ☐ Priority
 - ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - ☐ Lack of unity of invention
 - ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - ☐ Certain documents cited
 - ☐ Certain defects in the international application
 - ☐ Certain observations on the international application

Date of submission of the demand 26.04.2004	Date of completion of this report 09.03.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Muellners, W Telephone No. +31 70 340-3289 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/13017**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-11 as originally filed

Claims, Numbers

1-4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/13017**

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 1-4 (all partially)

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the said claims Nos. 1-4 (all partially)

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-4
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-4
Industrial applicability (IA)	Yes: Claims	1-4
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The International Searching Authority had raised an objection of lack of unity of invention and defined 12 different alleged inventions. Upon invitation to pay additional search fees according to Article 17(3)(a) and Rule 40.1 PCT (Form PCT/ISA/206), no required additional search fees were timely paid by the applicant. Consequently the International Search Report was restricted to the invention considered by the International Searching Authority as the invention first mentioned in the claims, which invention is covered by parts of claims 1-4.

Consequently also this written opinion is restricted to the subject-matter for which an International Search Report was established, i.e. said first alleged invention, defined by the International Searching Authority as:

A herbicidal synergistic composition comprising a mixture of metamifop and a synergistically effective amount of at least one compound selected from the compounds of the group: mesotrione, sulcotrione and benzobicyclon, with the two component mixture of metamifop with benzocyclon being excluded, and a corresponding method of controlling undesired plant growth in crops of useful plants

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The following assessment is for the reasons given under item III restricted to those parts of the subject-matter of claims 1-4 relating to the first invention as it was defined there.

Reference is made to the following documents:

D1 WO 00/05956 A

D2 US-A-5 447 903

D3 JP9030904 A (interpreted on the basis of the PAJ-abstract: PATENT ABSTRACTS OF JAPAN vol. 1997, no. 06, 30 June 1997.

D4: WO 02/085118

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP 03/13017

Novelty

The present application meets the novelty criterion of Article 33(1) PCT, because the subject-matter of claims 1-4 is new in the sense of Article 33(2) PCT.

Independent 1 relates to herbicidal compositions comprising a mixture of the herbicide metamifop and a synergistically effective amount of at least one compound selected from the compounds of the group: mesotrione, sulcotrione and benzobicyclon, with the two component mixture of metamifop with benzocyclon being excluded.

Independent claim 3 relates to a corresponding method of controlling undesired plant growth in crops of useful plants using said composition. Claim 2, formulated as depending on claim 1 has in fact the same scope as claim 1. Depending claim 4 restricts to rice as the crop plant.

The cited documents do not disclose compositions and methods according to the claims of the present application.

D1 discloses (see the passages cited in the International Search Report) metamifop, which is the N-methyl-N-(2-fluoro-phenyl)-amide of the known herbicide fenoxaprop, as a herbicide which is particularly useful for controlling barnyard grass in rice and is superior to fenoxaprop. It is also said to be "essential" to add one or more of a list of herbicides mentioning i.a. certain sulfonylureas, bentazone, simetryne and 2,4-D but none of the binary partners of claim 1 of the present application.

D2 discloses i.a. synergistic mixtures of sulcotrione and mesotrione with fenoxaprop ethyl ester. The mixtures show high selectivity and even safener activity, e.g. in rice.

D3 discloses synergistic mixtures of herbicidal benzoyl bicyclodiones, like benzobicyclon, and phenoxy acids, like 2,4-D, clomeprop and naproanilide, in particular for controlling weeds in rice.

D4 discloses mixtures of certain methylsulphonylbenzoyl-cyclohexanediones in combination with other herbicides, e.g. fenoxaprop, for controlling weeds in rice.

Inventive Step

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-4 does not involve an inventive step in the sense of Article 33(3) PCT.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP 03/13017

In the light of the description and the closest prior art of D1 the problem the application seeks to solve can be seen as the provision of synergistic mixtures of the known herbicide metamifop with another herbicide.

The proposed solution is the combination of metamifop with one or more of the benzoyl cyclohexandione herbicides mesotrione, sulcotrione or benzobicyclon.

The closest prior art of D1 discloses metamifop as a highly effective herbicide that is particularly useful for the selective control of barnyard grass in rice. In comparative tests it is demonstrated that it shows a selectivity in particular in rice crop that is superior to that of the structurally closely related herbicide fenoxaprop ethyl (cf. D1 tables 5-7). It also suggests to combine it with other herbicides. To add certain herbicides specifically listed is even said to be "essential" (cf. D1, page 1, lines 5-21; page 3, lines 9-13; example 3 and page 21, lines 16-28).

The skilled person looking for solutions to the problem specified above, would look for known synergistic mixtures of said closely related herbicide upon which metamifop according to D1 is already as such an improvement. Fenoxaprop-ethyl is the ethyl ester of the same 2-[4-(6-chloro-1,3-benzoxazol-2-yloxy)phenoxy]propionic acid of which metamifop is the N-methyl-N-(2-fluorophenyl)amide.

Document D2 discloses synergistic mixtures of fenoxaprop-ethyl with benzoyl-cyclohexanediones like mesotrione and sulcotrione the mixture is said to be selective and even to show safener activity in rice (cf. D2, col. 1, line 22-col. 2, line 10; col. 6, lines 27-51; col. 7, lines 23-53; col. 15, line 59 - col. 17, line 64; claims 1,6, and 13).

In view of this disclosure the skilled person would have considered it very likely that metamifop would also show a synergistic effect with these cyclohexandione herbicides, while, seen from D2, at the same time introducing into the known mixture of D2 the advantageously increased selectivity of metamifop compared with fenoxaprop-ethyl. From D3 it is further known that benzoyl-bicyclodione herbicides, e.g. benzobicyclon, show a synergistic effect with phenoxy acetic acid herbicides, like for instance 2,4-D and anilides like clomeprop and naproanilide. It was therefore also obvious to combine these mixtures or benzobicyclon with metamifop or herbicidal mixtures comprising metamifop.

Industrial Applicability

The subject-matter of claims 1-4 is considered to be industrially applicable (Article 33(1) and (4) PCT).